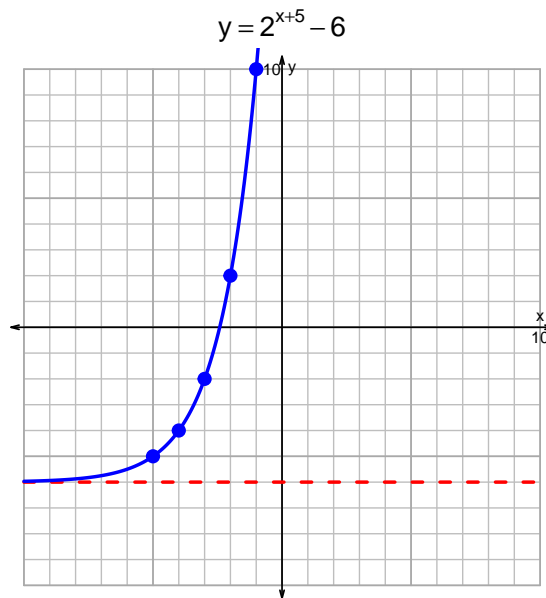
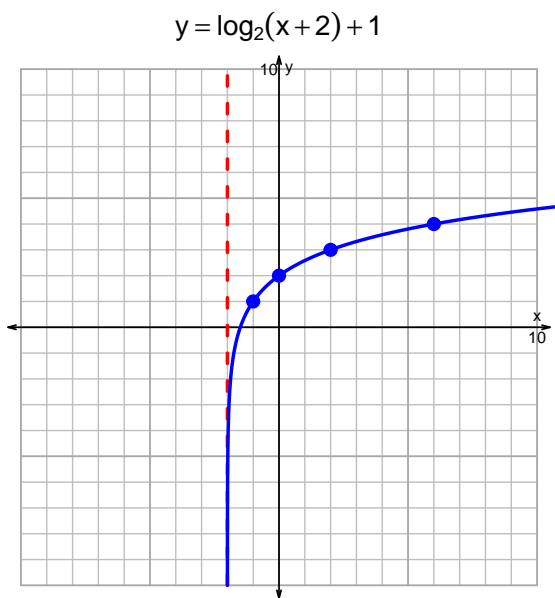


Name: \_\_\_\_\_

Date: \_\_\_\_\_

## s18: EXP LOG (SLTN v325)

1. (10 pts) Graph  $y = \log_2(x+2) + 1$  and  $y = 2^{x+5} - 6$  on the grids below. Also, draw any asymptotes with dashed lines.



*Somewhat useful hint:  $2^3 = 8$ , and thus  $\log_2(8) = 3$ .*

2. (10 pts) Write (but do not evaluate) the solution to the equation below by writing a logarithmic expression. Please do not do any arithmetic; just move numbers around.

$$19 = \left(\frac{4}{5}\right) \cdot 2^{7t/3}$$

Divide both sides by  $\frac{4}{5}$ .

$$\frac{19 \cdot 5}{4} = 2^{7t/3}$$

Take log, base 2, of both sides.

$$\log_2 \left( \frac{19 \cdot 5}{4} \right) = \frac{7t}{3}$$

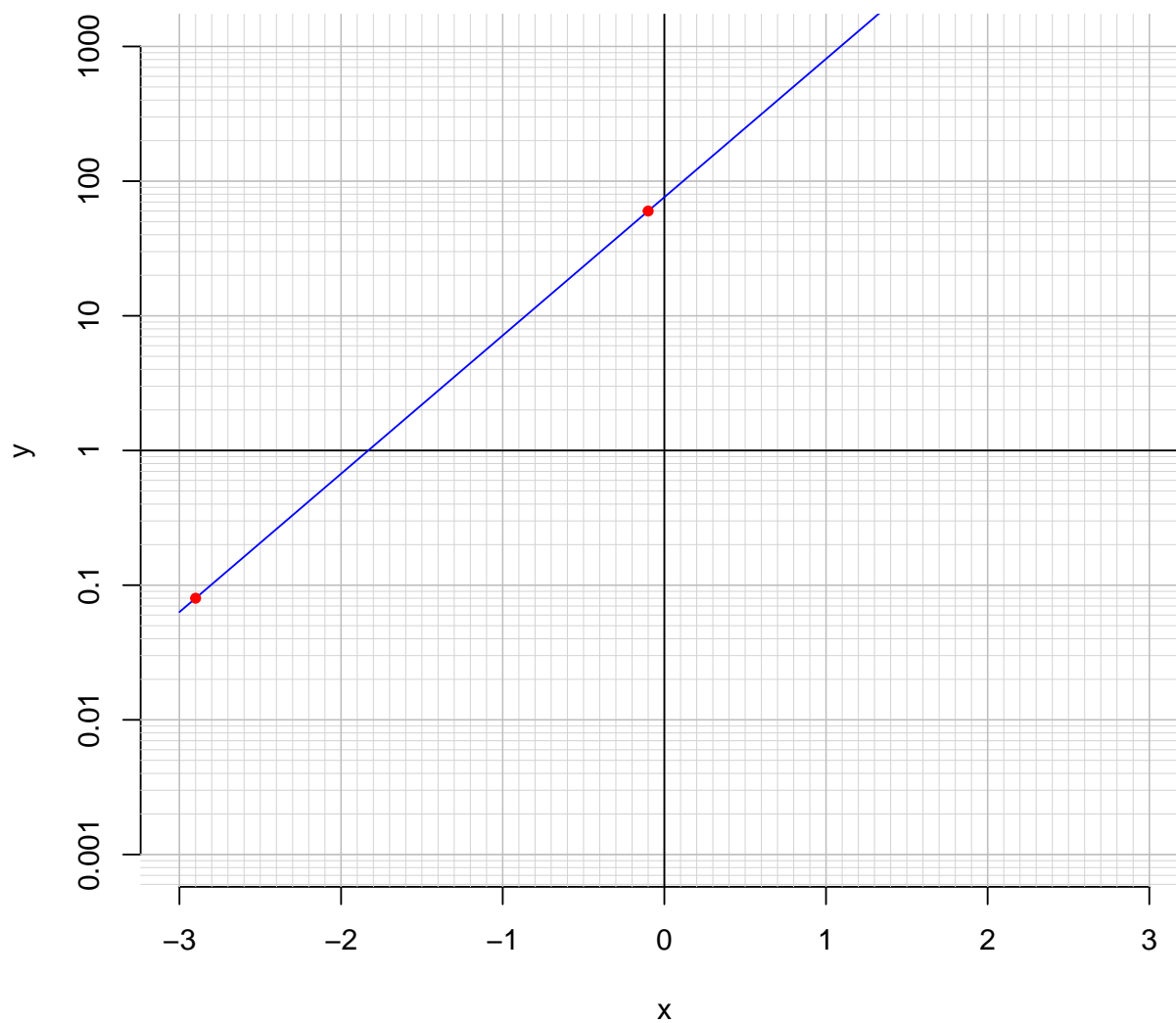
Divide both sides by  $\frac{7}{3}$ .

$$\frac{3}{7} \cdot \log_2 \left( \frac{19 \cdot 5}{4} \right) = t$$

Switch sides.

$$t = \frac{3}{7} \cdot \log_2 \left( \frac{19 \cdot 5}{4} \right)$$

3. (10 pts) An exponential function  $f(x) = 76 \cdot e^{2.36x}$  is graphed below on a semi-log plot.



- a. Using the plot above, evaluate  $f(-2.9)$ .

$$f(-2.9) = 0.08$$

- b. The inverse function is logarithmic.

$$f^{-1}(x) = \frac{1}{2.36} \cdot \ln\left(\frac{x}{76}\right)$$

Using the plot above, evaluate  $f^{-1}(60)$ .

$$f^{-1}(60) = -0.1$$